UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/908,950	07/19/2001	Robert C. Getts	4081.006	1927

7590 06/01/2005

Allen R. Kipnes
WATOV & KIPNES, P.C.
P.O. Box 247
PRINCETON JUNCTION, NJ 08550

EXAMINER	
CHUNDURU, SURYAPRABHA	
ART UNIT	PAPER NUMBER
1637	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/908,950	GETTS ET AL.	
	Examiner	Art Unit	
	Suryaprabha Chunduru	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/8/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on April 8, 2005 has been entered.

Status of Application

2. Claims 1-56 are currently pending. Claims 1-56 are considered for examination in this office action.

Priority

3. This application filed on July 19, 2003 claims benefit of US provisional 60/219,397 filed on 7/19/2000.

Information Disclosure Statement

4. The Information Disclosure Statement filed on April 8, 2005 has been entered and considered.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(i) Claims 53-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 53-56 are indefinite and unclear because it is not clear whether the claims are directed to a method or a composition, that is, the instant claims recite method steps, where as the claim 52, upon which the instant claims are dependent, recite a composition. Therefore it is unclear and indefinite whether the instant claims are drawn to a composition or to a method. Amendment to recite "the composition of claim 52" would obviate the rejection.

(ii) Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "the pre-hybridized RNA/recapture reagent complex" in line 1-2 of the claim 17. There is insufficient antecedent basis for this limitation in the claim because the limitation lacks support in the claim 1, upon which the instant claim is depended. Claim 1 recites "pre-hybridized RNA/capture reagent complex and thus the claim 17 lacks support for the limitation "pre-hybridized RNA/recapture reagent. Amendment to recite " the pre-hybridized RNA/capture reagent complex" would obviate the rejection.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

A. Claims 1-5, 9-17, 19-23, 27-36 43-49 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 5-9, 11, 18 and 22 of copending Application No. 09/802,162 (Pub No. US 2002/0051981 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claim 1-3, 19-21, 43-49 are generic to all that is recited in claims 1-2 and 18-22 of the co-pending application. That is, the claims 1, -2, 18 and 22 of the co-pending application fall entirely within the scope of the instant claims 1-3, 19-21, 43-49 or in other words, the instant claims 1-3, 19, 43-49 are anticipated by the claims 1-2, 18 and 22 of the application. Specifically the method of steps (1)- (4) of the claim 1 in combination with 2, and the method steps (1) – (3) of claim 18 in combination with claims 22, comprising a mixture of cDNA reagent having a capture sequence, a dendrimer and a microarray with plurality of features (nucleic acid sequences), are within the scope of the instant claims 1-3, 19-21, 43-49. Further the instant claims 4-5, 9-12, 14-17 are generic to all that is recited in claims 5-9, 11 of the co-pending application, that is, the claims 5-9, 11 of the co-pending application fall entirely within the scope of the instant claims 4-5, 9-12, 14-17. Thus the instant claims encompass the claims in the co-pending application and are related as genus and species, and are coextensive in scope.

The courts have stated that a genus is obvious in view of the teachings of a species. see Slayter, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); and In re Gosteli, 872 F.2d 1008, 10 USPQ2d 1614 (Fed.Cir. 1989). Therefore the instantly claimed method is obvious over the claims in the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

B. Claims 1-5, 9-17, 19-23, 27-36, 39-49 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12, 16, 18-19, 21, 23 of copending Application No. 10/825,776 (pub No. US 2005/0003366A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims 1-3, 19-21, 43-49 are generic to all that is recited in claims 1-5, 12 of the co-pending application. That is, the claims 1-5, 12 of the co-pending application fall entirely within the scope of the instant claims 1-3, 19, 43-49 or in other words, the instant claims 1-3, 19-21, 43-49 are anticipated by the claims 1-5, 12 of the co-pending application. Specifically the method of steps (a)- (b) of the claim 1 in combination with 2-5, 12, comprising a mixture of nucleic acid reagent having a capture sequence, a dendrimer and a microarray with plurality of features (nucleic acid sequences), are within the scope of the instant claims 1-3, 19-21, 43-49. Further the instant claims 4-5, 9-12, 14-17 are generic to all that is recited in claims 6-11, 16-19, 21, 23 of the co-pending application, that is, the claims 6-11, 16-19, 21, 23 of the co-pending application fall entirely within the scope of the instant claims 4-5, 9-12, 14-17. Thus the instant claims encompass the claims in the co-pending application and are related as genus and species, and are coextensive in scope.

The courts have stated that a genus is obvious in view of the teachings of a species. see Slayter, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); and In re Gosteli, 872 F.2d 1008, 10 USPQ2d 1614 (Fed.Cir. 1989). Therefore the instantly claimed method is obvious over the claims in the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

C. Claims 1-3, 18-21, 35, 37-38, 43-49 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-24, 30 of copending Application No. 10/234,069 (Pub No. 2004/0009487A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims 1-3, 19-21, 43-49 are generic to all that is recited in claim 30 of the co-pending application. That is, the claim 30 of the co-pending application fall entirely within the scope of the instant claims 1-3, 19, 43-49 or in other words, the instant claims 1-3, 19, 43-49 are anticipated by the claim 30 of the co-pending application. Specifically the method of steps (1)-(3) of the claim 30 comprising a mixture of nucleic acid reagent having a capture sequence, a dendrimer and a microarray with plurality of features (nucleic acid sequences), are within the scope of the instant claims 1-3, 19-21, 43-49. Further the instant claims 18, 35 are generic to all that is recited in claims 8-11 of the co-pending application, that is, the claims 8-11 of the co-pending application fall entirely within the scope of the instant claims 18, 35. The instant claims 37-38 are generic to all that is recited in claims 17-24 of the co-pending application, that is claims 17-24 of the co-pending application fall entirely within the scope of the instant claims 37-

38. Thus the instant claims encompass the claims in the co-pending application and are related as genus and species, and are coextensive in scope.

The courts have stated that a genus is obvious in view of the teachings of a species. see Slayter, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); and In re Gosteli, 872 F.2d 1008, 10 USPQ2d 1614 (Fed.Cir. 1989). Therefore the instantly claimed method is obvious over the claims in the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

D. Claims 1-5, 9-17, 19-23, 27-36, 39-49 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12, 16, 18-19, 21, 23 of copending Application No. 10/050,088 (Pub No. US 2002/0094538 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims 1-3, 19-21, 43-49 are generic to all that is recited in claims 1-5, 12 of the co-pending application. That is, the claims 1-5, 12 of the co-pending application fall entirely within the scope of the instant claims 1-3, 19, 43-49 or in other words, the instant claims 1-3, 19-21, 43-49 are anticipated by the claims 1-5, 12 of the co-pending application. Specifically the method of steps (a)- (b) of the claim 1 in combination with 2-5, 12, comprising a mixture of nucleic acid reagent having a capture sequence, a dendrimer and a microarray with plurality of features (nucleic acid sequences), are within the scope of the instant claims 1-3, 19-21, 43-49. Further the instant claims 4-5, 9-12, 14-17 are generic to all that is recited in claims 6-11, 16, 18-19, 21, 23 of the co-pending application, that is, the claims 6-11, 16, 18-19, 21, 23 of the co-pending application fall entirely within the scope of the instant claims 4-5, 9-12, 14-17. Thus the

instant claims encompass the claims in the co-pending application and are related as genus and species, and are coextensive in scope.

The courts have stated that a genus is obvious in view of the teachings of a species. see Slayter, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); and In re Gosteli, 872 F.2d 1008, 10 USPQ2d 1614 (Fed.Cir. 1989). Therefore the instantly claimed method is obvious over the claims in the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claims 1-5, 9-17, 19-23, 27-36 39-49 are provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 09/802,162 (Pub No. US 2002/0051981 A1) which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e), if published under 35 U.S.C. 122(b) or patented. This provisional rejection under 35 U.S.C. 102(e) is based upon a presumption of future publication or patenting of the copending application.

With regard to the claims 1-3, 19-21, 43-49, the co-pending application discloses a method for detection of the presence or absence of a target nucleic acid sequence, said method comprising contacting a microarray comprising plurality of nucleotide sequences with a first and second component, wherein the first component comprises a capture sequence, and said second component comprises a dendrimer having a first arm complementary to the capture sequence of the first component and another arm comprises a detectable label, incubating said mixture for sufficient time and under conditions to facilitate hybridization and detecting the hybridization patterns (see claims 1, -2, 18 and 22 of the co-pending application). With regard to claims 4-5, 9-17, 22-23, 27-36, the co-pending application discloses that said method is carried out at different temperatures ranging from 50 –65 C and washing the microarray after hybridization to remove unhybridized probe components (see claims 5-9, 11 of the co-pending application).

This provisional rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

B. Claims 1-5, 9-17, 19-23, 27-36, 43-49 are provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 10/825,776 (pub No. US 2005/0003366A1) which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e), if published under 35 U.S.C. 122(b) or patented. This provisional rejection

under 35 U.S.C. 102(e) is based upon a presumption of future publication or patenting of the copending application.

With regard to the claims 1-3, 19-21, 43-49, the co-pending application discloses a method for detection of the presence or absence of a target nucleic acid sequence, said method comprising contacting a microarray comprising plurality of nucleotide sequences with a first and second component, wherein the first component comprises a capture sequence, and said second component comprises a dendrimer having a first arm complementary to the capture sequence of the first component and another arm comprises a detectable label, incubating said mixture for sufficient time and under conditions to facilitate hybridization and detecting the hybridization patterns (see claims 1-5, 12 of the co-pending application). Further with regard to the instant claims 4-5, 9-12, 14-17 the co-pending application discloses that said method is carried out at different temperatures ranging from 50 –65^0 C and washing the microarray after hybridization to remove unhybridized probe components (claims 6-11, 16, 18-19, 21, 23 of the co-pending application).

This provisional rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

C. Claims 1-3, 18-21, 35, 37-38, 43-49 are provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 10/234,069 (Pub No. 2004/0009487A1),

which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e), if published under 35 U.S.C. 122(b) or patented. This provisional rejection under 35 U.S.C. 102(e) is based upon a presumption of future publication or patenting of the copending application.

With regard to the claims 1-3, 19-21, 43-49, the co-pending application discloses a method for detection of the presence or absence of a target nucleic acid sequence, said method comprising contacting a microarray comprising plurality of nucleotide sequences with a first and second component, wherein the first component comprises a capture sequence, and said second component comprises a dendrimer having a first arm complementary to the capture sequence of the first component and another arm comprises a detectable label, incubating said mixture for sufficient time and under conditions to facilitate hybridization and detecting the hybridization patterns (see claim 30 of the co-pending application). With regard to claims 18, 35, the co-pending application discloses that said method comprises a blocking probe (see claims 8-11 of the co-pending application). With regard to claims 37-38, the copending application discloses that the method further comprises locked nucleic acid probes (see claims 17-24 of the co-pending application).

This provisional rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

D. Claims 1-5, 9-17, 19-23, 27-36, 43-49 are provisionally rejected under 35 U.S.C. 102(e) as being anticipated by copending Application No. 10/050,088 (Pub No. US 2002/0094538 A1), which has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the copending application, it would constitute prior art under 35 U.S.C. 102(e), if published under 35 U.S.C. 122(b) or patented. This provisional rejection under 35 U.S.C. 102(e) is based upon a presumption of future publication or patenting of the copending application.

With regard to the claims 1-3, 19-21, 43-49, the co-pending application discloses a method for detection of the presence or absence of a target nucleic acid sequence, said method comprising contacting a microarray comprising plurality of nucleotide sequences with a first and second component, wherein the first component comprises a capture sequence, and said second component comprises a dendrimer having a first arm complementary to the capture sequence of the first component and another arm comprises a detectable label, incubating said mixture for sufficient time and under conditions to facilitate hybridization and detecting the hybridization patterns (see claims 1-5, 12 of the co-pending application). Further with regard to the instant claims 4-5, 9-12, 14-17 the co-pending application discloses that said method is carried out at different temperatures ranging from 50 –65^0 C and washing the microarray after hybridization to remove unhybridized probe components (claims 6-11, 16, 18-19, 21, 23 of the co-pending application).

This provisional rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the copending application was derived from the inventor of this application and is thus not the invention "by another," or

by an appropriate showing under 37 CFR 1.131. This rejection may not be overcome by the filing of a terminal disclaimer. See *In re Bartfeld*, 925 F.2d 1450, 17 USPQ2d 1885 (Fed. Cir. 1991).

E.. Claims 1-2, 7-8, 17, 19-20, 22, 25-26, 36, 39-43, 45, 47, 49, 50-52, 54-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Dellinger et al. (USPN. 5, 853,993, reference taken from IDS submitted by Applicants).

Note: In the light of the instant specification, the limitation that the second component comprises at least one first arm and at least one second arm is given broadest reasonable interpretation as a reporter probe having hairpin structure with two arms, since this limitation is not defined in the instant specification. Further it is noted that a dendrimer is a highly branched structure. Thus a dendrimer is considered as having more than two arms. Further an immobilized probe sequences on a solid support is considered as a microarray.

Dellinger et al. teach a method of claims 1, 47, for determining the presence or absence of a specific nucleic acid sequence in an RNA reagent of a target sample, said method comprises (a) incubating a mixture comprising (i) a first component including an RNA reagent (mRNA) extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7); (ii) a second component comprising a capture reagent (reporter probe) comprising a label capable of emitting a detectable signal and a nucleotide sequence complementary to the capture sequence of the RNA reagent of the first component (see col. 4, line 44-45, col. 5, line 7-12, line 23-46), at a first temperature to induce hybridization and thereby to form a pre-hybridized RNA-capture reagent complex (reporter-analyte complex (see col. 5, line 34-46); (b) contacting pre-hybridized RNA-

Capture complex with a microarray having thereon a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 4, line 44-46); (d) incubating said mixture at a second temperature to induce hybridization between pre-hybridized RNA-capture reagent complex and the probe on the array, and detecting the he hybridization pattern (col. 4, line 46-49, col. 7, line 27-58).

With regard to claim 2, 20, 49, Dellinger et al. teach that the capture reagent includes carbohydrates, proteins and nucleic acids (see col. 3, line 32-37, col. 8, line 60-62);

With regard to claims 17, 22, 36, Dellinger et al. teach said method further comprises passing a base solution to separate the hybridized sequences from the unhybridized probe sequences or a wash step (see col. 6, line 17-27, col. 9, line 43-45, col. 10, line 51-60);

With regard to claim 7-8, 25-26, 50-51 Dellinger et al. teach that the capture sequence is a single-stranded oligonucleotide consisting of at least one adenine base or at least one thymine base (polyA tail or dT tail) (see col. col. 5, line 23-67, col. 6, line 1, line 49-67, col. 7, line 1-4);

With regard to claim 19, Dellinger et al. teach a method for determining the presence of a specific sequence in a RNA reagent of a target sample, said method comprising (a) contacting a first component including an RNA reagent extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7) with a microarray having a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 6, line 17-21); (b) incubating the RNA reagent and the complementary probe nucleic acid sequences on a microarray at a first temperature to hybridize the target nucleotide sequence of the RNA reagent to the complementary probe on the microarray (to form a capture probe-analyte hybrid, see col.

6, line 17-21); (c) contacting a second component comprising a capture reagent comprising a label and a nucleotide complementary to the capture sequence of the RNA reagent of the first component and (d) incubating at a second temperature to induce hybridization between the first and second component , wherein the hybridization signal is detected (see col. 6, line 21-27).

With regard to claims 39- 42, Dellinger et al. teach that said probe nucleotide is an oligonucleotide (oligonucleotide sequence, which includes RNA and DNA sequences) (see col. 3, line 6-31);

With regard to claim 43, 45, Dellinger et al. teach that the second component comprises a capture reagent having at least one arm comprising said label and at least one second arm comprising said nucleotide sequence complementary to said capture sequence of the RNA reagent (see col. 8, line 64-67, col. 9, line 1-19, indicates hairpin structures comprise two arms one having a label and other having complementary sequence with a target analyte).

With regard to claim 52, Dellinger et al. teach a kit composition comprising (a and b) an array of probe sequences and RNA reagent comprising capture sequence (homopolymeric regions (see col. 2, line 27-32), immobilized capture probe sequences on a solid surface is considered as a microarray); (c) a second component (reporter probe) comprising a complementary nucleotide sequence to said capture sequence on the RNA reagent (analyte homoplymeric region) and said second component further comprises a label (see col. 2, line 30-32, col. 3, line 32-37).

With regard to claim 54, Delinger et al. also each that the second component (reporter probe) comprises molecules selected from the group of carbohydrates, proteins and nucleic acids (see col.8, line 60-63);

With regard to claims 55-56, Dellinger et al. teach said capture sequence (homopolymeric region) comprises poly A tail (see col. 5, line 49-67, col. 6, line 15). Thus the instant claims are anticipated by Dellinger et al.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

A. Claims 3, 21, 44, 46, 48, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dellinger et al. (USPN. 5, 853,993) in view of Nilsen (USPN. 6,274,723).

Dellinger et al. teach a method of claims 3, 44, for determining the presence or absence of a specific nucleic acid sequence in an RNA reagent of a target sample, said method comprises (a) incubating a mixture comprising (i) a first component including an RNA reagent (mRNA) extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7); (ii) a second

component comprising a capture reagent (reporter probe) comprising a label capable of emitting a detectable signal and a nucleotide sequence complementary to the capture sequence of the RNA reagent of the first component (see col. 4, line 44-45, col. 5, line 7-12, line 23-46), at a first temperature to induce hybridization and thereby to form a pre-hybridized RNA-capture reagent complex (reporter-analyte complex (see col. 5, line 34-46); (b) contacting pre-hybridized RNA-Capture complex with a microarray having thereon a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 4, line 44-46); (d) incubating said mixture at a second temperature to induce hybridization between pre-hybridized RNA-capture reagent complex and the probe on the array, and detecting the he hybridization pattern (col. 4, line 46-49, col. 7, line 27-58).

With regard to claim 21, 46, Dellinger et al. teach a method for determining the presence of a specific sequence in a RNA reagent of a target sample, said method comprising (a) contacting a first component including an RNA reagent extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7) with a microarray having a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 6, line 17-21); (b) incubating the RNA reagent and the complementary probe nucleic acid sequences on a microarray at a first temperature to hybridize the target nucleotide sequence of the RNA reagent to the complementary probe on the microarray (to form a capture probe-analyte hybrid, see col. 6, line 17-21); (c) contacting a second component comprising a capture reagent comprising a label and a nucleotide complementary to the capture sequence of the RNA reagent of the first component and (d) incubating at a second temperature to induce hybridization

between the first and second component , wherein the hybridization signal is detected (see col. 6, line 21-27).

With regard to claim 46, 48, Dellinger et al. teach that the second component comprises a capture reagent having at least one arm comprising said label and at least one second arm comprising said nucleotide sequence complementary to said capture sequence of the RNA reagent (see col. 8, line 64-67, col. 9, line 1-19, indicates hairpin structures comprise two arms one having a label and other having complementary sequence with a target analyte).

With regard to claim 53, Dellinger et al. teach a kit composition comprising (a and b) an array of probe sequences and RNA reagent comprising capture sequence (homopolymeric regions (see col. 2, line 27-32), immobilized capture probe sequences on a solid surface is considered as a microarray); (c) a second component (reporter probe) comprising a complementary nucleotide sequence to said capture sequence on the RNA reagent (analyte homoplymeric region) and said second component further comprises a label (see col. 2, line 30-32, col. 3, line 32-37).

However, Dellinger et al. did not teach use of a dendrimer nucleotide sequences as a second component capture reagent.

Nilsen et al. teach a method of claims 3, 21, 44, 46, 48, 53, for detecting a specific nucleic acid in a target sample using a dendrimeric probe wherein Nilsen et al. teach that the method comprises (i) contacting a bead having specific probe sequences with a mixture containing a first component comprising labeled target nucleic acid (DNA or RNA) having a capture sequence and a second component comprising a dendrimer having at least one arm with a nucleotide sequence complementary to the capture sequence of the first component (see

column 14, lines 30-35, column 15, lines 37-63); (ii) mixing the first and second components at a temperature to form a bridge between the two components to enable the cross-linking of first component to the second (see column 16, lines 8-11); and incubating the bound mixture with the said bead and detecting signal as an indication of the binding of the target sequence to the specific probe sequence on the bead (see column 16, lines 12-67, column 18, lines 27-51).

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made, to modify a method for determining the presence of a specific nucleotide sequence as taught by Dellinger et al. with a dendrimer probe as taught by Nilsen et al. to achieve expected advantage of developing an enhanced sensitivity of detecting a target nucleic acid. An ordinary practitioner would have been motivated to combine the method of Dellinger et al. with the step of adding dendrimeric probe as taught by Nilsen et al. for the purpose of increasing the specificity and sensitivity of detecting a target nucleic acid. An ordinary person skilled in the art would have a reasonable expectation of success that such modification would result in reducing non-specific binding and reduce background noise and enhance specific hybridization signal because Nilsen et al. taught that the use of dendrimeric probe or oligomers in hybridization assays allow specific and efficient hybridization and minimizes the non-specific (back-ground noise) hybridization (col. 5, line 15-27). Such modification is considered as obvious over the cited prior art in the absence of secondary considerations.

B. Claims 18, 35, 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dellinger et al. (USPN. 5, 853,993) in view of Weston et al (WO99/37805, 29 July 1999).

Dellinger et al. teach a method of claims 18, for determining the presence or absence of a specific nucleic acid sequence in an RNA reagent of a target sample, said method comprises (a) incubating a mixture comprising (i) a first component including an RNA reagent (mRNA) extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7); (ii) a second component comprising a capture reagent (reporter probe) comprising a label capable of emitting a detectable signal and a nucleotide sequence complementary to the capture sequence of the RNA reagent of the first component (see col. 4, line 44-45, col. 5, line 7-12, line 23-46), at a first temperature to induce hybridization and thereby to form a pre-hybridized RNA-capture reagent complex (reporter-analyte complex (see col. 5, line 34-46); (b) contacting pre-hybridized RNA-Capture complex with a microarray having thereon a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 4, line 44-46); (d) incubating said mixture at a second temperature to induce hybridization between pre-hybridized RNA-capture reagent complex and the probe on the array, and detecting the he hybridization pattern (col. 4, line 46-49, col. 7, line 27-58).

With regard to claim 35, 37-38, Dellinger et al. teach a method for determining the presence of a specific sequence in a RNA reagent of a target sample, said method comprising (a) contacting a first component including an RNA reagent extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7) with a microarray having a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 6, line 17-21); (b) incubating the RNA reagent and the complementary probe nucleic acid sequences on

a microarray at a first temperature to hybridize the target nucleotide sequence of the RNA reagent to the complementary probe on the microarray (to form a capture probe-analyte hybrid, see col. 6, line 17-21); (c) contacting a second component comprising a capture reagent comprising a label and a nucleotide complementary to the capture sequence of the RNA reagent of the first component and (d) incubating at a second temperature to induce hybridization between the first and second component , wherein the hybridization signal is detected (see col. 6, line 21-27).

However, Dellinger et al. did not teach use of a blocker probes comprising locked nucleic acid nucleotide (LNA).

Weston et al. teach a method of claims 18, 35, detecting a nucleotide sequence of interest comprising a target DNA and a "blocking oligonucleotide" that hybridizes to the sequence of interest to inhibit re-annealing of the target strand to its complementary strand (see page 11, paragraph 1).

With regard to claim 37-38, Weston et al. teach the blocking oligonucleotide comprises LNA, PNA, DNA or combination thereof. (see page 11, paragraph 1).

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made, to modify a method for determining the presence of a specific nucleotide sequence as taught by Dellinger et al. with a blocker probe comprising LNA probe as taught by Weston et al. to achieve expected advantage of developing an enhanced sensitivity of detecting a target nucleic acid. An ordinary practitioner would have been motivated to combine the method of Dellinger et al. with the step of adding blocker probe as taught by Weston et al. for the purpose of reducing the background noise increasing the specificity and sensitivity of

detecting a target nucleic acid. An ordinary person skilled in the art would have a reasonable expectation of success that such modification would result in reducing non-specific binding and reduce background noise and enhance specific hybridization signal because Weston et al. taught that the use of blocker probe in hybridization assays allow specific and efficient hybridization and minimizes the reannealing of the target strand to its complementary strand thereby reduces non-specific (back-ground noise) hybridization (page 11, line 9-13 of paragraph 1). Such modification is considered as obvious over the cited prior art in the absence of secondary considerations.

C. Claims 4-6, 9-16, 23-24, 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dellinger et al. (USPN. 5, 853,993) in view of Van Ness et al. (USPN. 6,361,940)

Dellinger et al. teach a method of claims 4-6, 9-16, 23-24, 27-34 for determining the presence or absence of a specific nucleic acid sequence in an RNA reagent of a target sample, said method comprises (a) incubating a mixture comprising (i) a first component including an RNA reagent (mRNA) extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7); (ii) a second component comprising a capture reagent (reporter probe) comprising a label capable of emitting a detectable signal and a nucleotide sequence complementary to the capture sequence of the RNA reagent of the first component (see col. 4, line 44-45, col. 5, line 7-12, line 23-46), at a first temperature to induce hybridization and thereby to form a pre-hybridized RNA-capture reagent complex (reporter-analyte complex (see col. 5, line 34-46); (b) contacting pre-hybridized RNA-Capture complex with a microarray having thereon a plurality of features each

comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 4, line 44-46); (d) incubating said mixture at a second temperature to induce hybridization between pre-hybridized RNA-capture reagent complex and the probe on the array, and detecting the he hybridization pattern (col. 4, line 46-49, col. 7, line 27-58).

With regard to claim 35, 37-38, Dellinger et al. teach a method for determining the presence of a specific sequence in a RNA reagent of a target sample, said method comprising (a) contacting a first component including an RNA reagent extracted from a target sample, said RNA reagent having a target nucleic acid sequence and a capture sequence (homopolymeric tail) (see col. 4, line 41-43, col. 5, line 4-7) with a microarray having a plurality of features each comprising a particular probe nucleotide sequence (immobilized capture probe) (see col. 6, line 17-21); (b) incubating the RNA reagent and the complementary probe nucleic acid sequences on a microarray at a first temperature to hybridize the target nucleotide sequence of the RNA reagent to the complementary probe on the microarray (to form a capture probe-analyte hybrid, see col. 6, line 17-21); (c) contacting a second component comprising a capture reagent comprising a label and a nucleotide complementary to the capture sequence of the RNA reagent of the first component and (d) incubating at a second temperature to induce hybridization between the first and second component , wherein the hybridization signal is detected (see col. 6, line 21-27). With regard to claims 10, 12, 28, 34, Dellinger et al. teach that the incubation time to induce sufficient hybridization ranges from 1-3 hours (see col. 10, line 51-60).

However, Dellinger et al. did not specifically teach hybridization temperatures ranging from 50-60^0 C, incubation time, and base solution to separate and purge the hybridized RNA reagent.

Van Ness et al. teach a method of claims 5, 9-12, 14, 16, 23, 27-28, 30, 32-34, for enhancing hybridization and probing or priming specificity, wherein Van Ness et al. teach parameters of a thermal melting profiles (helical coil transition) of an oligonucleotide in hybridization solutions (hybotropic or salt solutions used for separating and purging of hybridized complexes from an array) and the dependency of temperatures (discrimination temperatures) based on the base composition and G-C content of the oligonucleotide probes ranging from 0- 80^0 C (see col. 34, line 48-67, col. 35, line 1-45, col. 45, line 4-33). With regard to claims 4, 6, 22, 24, Van Ness et al. also teach the base solution is sodium hydroxide (see col. 66, line 10-14); With regard to claims 13, 15, 29, 31, Van Ness et al. teach that the probe nucleotide sequences on microarray comprise oligonucleotides and cDNA sequences (see col. 66, line 21-40).

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made, to modify a method for determining the presence of a specific nucleotide sequence as taught by Dellinger et al. with a the parameters that enhance hybridization specificity such as incubation temperatures and hybridization solutions as taught by Van Ness et al. to achieve expected advantage of developing an enhanced sensitivity and specificity of detecting a target nucleic acid. An ordinary practitioner would have been motivated to combine the method of Dellinger et al. with the step of adding said hybridization parameters as taught by Van Ness et al. for the purpose of increasing the specificity of hybridization assay. An ordinary person skilled in the art would have a reasonable expectation of success that such modification would result in enhance specificity of hybridization signal because Van Ness et al. taught that the parameters to optimize hybridization conditions and to

increase hybridization specificity (col. col. 56, line 52-67, col. 57, line 1-16). Such modification is considered as obvious over the cited prior art in the absence of secondary considerations. Further, selection of specific hybridization conditions including incubation time, temperatures, oligonucleotide probes represents routine optimization with regard to sequence, length and composition of the oligonucleotide, which routine optimization parameters are explicitly recognized in Van Ness et al. As noted in *In re Aller*, 105 USPQ 233 at 235,More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. Routine optimization is not considered inventive and no evidence has been presented that the selection of hybridization conditions performed was other than routine, that the products resulting from the optimization have any unexpected properties, or that the results should be considered unexpected in any way as compared to the closest prior art.

Conclusion

No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 571-272-0783. The examiner can normally be reached on 8.30A.M. - 4.30P.M , Mon - Friday,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Prabha Chunduru 5/31/05

Suryaprabha Chunduru
Examiner
Art Unit 1637